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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,424	09/08/2000	Changming Liu	09725-005001	2970

44987 7590 01/26/2007
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EXAMINER	
ENGLAND, DAVID E	
ART UNIT	PAPER NUMBER
2143	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/658,424	LIU ET AL.	
	Examiner	Art Unit	
	David E. England	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

PL

DETAILED ACTION

1. Claims 1 – 22 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5, 6 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Iverson et al. (6052379) (hereinafter Iverson).

4. Referencing claim 1, as closely interpreted by the Examiner, Iverson teaches a method for allocating bandwidth in a network appliance where the network appliance includes a plurality of guaranteed bandwidth buckets used to evaluate when to pass traffic through the network appliance, the method comprising:

5. providing a shared bandwidth bucket associated with each of the plurality of the guaranteed bandwidth buckets, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19);

6. allocating bandwidth to the shared bandwidth bucket based on the underutilization of bandwidth in any one of the plurality of guaranteed bandwidth buckets, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19);

7. determining whether bandwidth in one or the plurality of guaranteed bandwidth buckets is sufficient to allow traffic to pass immediately through the network appliance, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19); and

8. transferring bandwidth from the shared bandwidth bucket to one of the plurality of guaranteed bandwidth buckets when it is determined that bandwidth in one of the plurality of guaranteed bandwidth buckets is not sufficient to allow traffic to pass immediately through the network appliance, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19).

9. Referencing claim 5, as closely interpreted by the Examiner, Iverson teaches each guaranteed bandwidth bucket is associated with a traffic shaping policy, (e.g. col. 17, line 56 – col. 18, line 19, *"leaky bucket"*).

10. Referencing claim 6, as closely interpreted by the Examiner, Iverson teaches a plurality of guaranteed bandwidth buckets are associated with a single traffic shaping policy, (e.g. col. 17, line 56 – col. 18, line 19, *"leaky bucket"*).

11. Claim 14 is rejected for similar reasons as stated above.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. Claims 2, 3, 7 – 11, 13 and 15 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson as applied to claims 1 and 5 above, and in view of Ho (6862270).

15. As per claim 2, as closely interpreted by the Examiner, Iverson teaches a shared bandwidth bucket but does not specifically teach tokens in the bucket. Ho teaches tokens in a bucket, (e.g. col. 11, lines 30 – 44, *"token bucket"*). It would have been obvious to on of ordinary skill in the art at the time the invention was made to combine Ho with Iverson because tokens can be allocated as a set rate, example 1 token equaling 1 kilobyte, which could aid in classifying packets to a type of service or priority given, by the amount of tokens guaranteed to the packet.

16. As per claim 3, as closely interpreted by the Examiner, Iverson teaches a guaranteed bandwidth bucket but does not specifically teach tokens in the bucket. Ho teaches tokens in a bucket, (e.g. col. 11, lines 30 – 44, *"token bucket"*). It would have been obvious to on of ordinary skill in the art at the time the invention was made to combine Ho with Iverson because of similar reasons stated above.

17. As per claim 7, as closely interpreted by the Examiner, Iverson teaches a traffic shaping policy but does not specifically teach a policy based on IP address.

18. Ho teaches a policy screens based on IP address, (e.g. col. 12, lines 40 – 62, *"parameters such as... IP Source Address"*). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine Ho with Iverson because it would be more beneficial in certain situations, for example where low-priority traffic in one LAN group flow is protected form high-priority traffic in a misbehaving (not conforming to specified flow spec) flow when both flows are forwarded through the same wan group/VC.

19. As per claim 8, as closely interpreted by the Examiner, Iverson teaches a traffic shaping policy but does not specifically teach a policy based on source IP address.

20. Ho teaches a policy based on source IP address, (e.g. col. 12, lines 40 – 62, *"parameters such as... IP Source Address"*). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine Ho with Iverson because of similar reasons stated above.

21. As per claim 9, as closely interpreted by the Examiner, Iverson teaches a traffic shaping policy but does not specifically teach a policy based on destination IP address.

22. Ho teaches a policy based on destination IP address, (e.g. col. 12, lines 40 – 62, *"parameters such as... IP Destination Address"*). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine Ho with Iverson because of similar reasons stated above.

23. As per claim 10, as closely interpreted by the Examiner, Iverson teaches a traffic shaping policy but does not specifically teach a policy based on protocol type.

24. Ho teaches a policy based on protocol type, (e.g. col. 12, lines 40 – 62, *"parameters such as... IP protocol"*). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine Ho with Iverson because of similar reasons stated above. Furthermore, to would be more efficient for a system that processes specific data protocols to filter the data based on protocol type before the data reaches the processor.

25. As per claim 11, as closely interpreted by the Examiner, Iverson teaches a traffic shaping policy but does not specifically teach a policy based on UDP/TCP port number. Ho teaches a policy based on UDP /TCP port number, (e.g. col. 12, lines 40 – 62, *"parameters such as... TCP/UDP Destination Port Start"*). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine Ho with Iverson because it would be more efficient for a system to utilize a widely use protocol that most system use than have different protocols that a foreign network is unfamiliar with and will not be able to understand the packet's format.

26. As per claim 15, as closely interpreted by the Examiner, Iverson in combination with Ho teach all that is similar above in claim 1 as applied to claim 15, Ho further teaches a scheduler operable to

27. evaluate a packet to determine if a traffic shaping policy should be applied to a given packet, (e.g. col. 12, lines 15 – 40, *"QME, FCE, FSE"*),

28. evaluate a guaranteed bandwidth bucket associated with an identified traffic shaping policy, (e.g. col. 12, lines 15 – 40, *"QME, FCE, FSE"*), and Iverson teaches determine when the guaranteed bandwidth bucket associated with an identified traffic shaping policy has insufficient capacity to support a transfer of the packet through the network, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19), and

29. borrow bandwidth from the shared bandwidth bucket by a respective guaranteed bandwidth bucket to allow traffic to pass immediately through the network appliance, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19). It would have been obvious to on of ordinary skill in the art at the time the invention was made to combine Ho with Iverson because of similar reasons stated above.

30. As per claim 16, as closely interpreted by the Examiner, Iverson teaches a network device comprising:

31. a first bucket configured to receive bandwidth at a first information rate, (e.g. col. 17, line 41 – col. 18, line 20, *"CIR"*);

32. a second bucket configured to receive bandwidth at a second information rate, (e.g. col. 17, line 41 – col. 18, line 20, *"bucket 402"*);

33. a third bucket configured to receive extra bandwidth from the second bucket, (e.g. col. 17, line 41 – col. 18, line 20, *"bucket 404", "BpEsum is the water level value in the second*

bucket 404 and represents the current accumulated value of unused bandwidth in excess of CIR+B_c (i.e. past overflows from the first bucket 402)."); and

34. a scheduler configured to:

35. determine if a size of traffic received at the network device exceeds a bandwidth stored in the first bucket, (e.g. col. 17, line 41 – col. 18, line 20),

36. determine, when the size of the traffic does not exceed the bandwidth stored in the first bucket, if a size of the traffic exceeds a bandwidth stored in the second bucket, (e.g., col. 18, line 32 – col. 19, line 27), and

37. transfer, when the size of the traffic exceeds the number of tokens stored in the second bucket, and appropriate number of tokens from the third bucket to the second bucket so that the second bucket includes a number of tokens that equals or exceeds the size of the traffic, (e.g., col. 18, line 32 – col. 19, line 27). Iverson does not specifically teach the use of tokens. Ho teaches the use of tokens in buckets and refreshing said tokens, (e.g. col. 11, lines 30 – 44, *"token bucket"*). It would have been obvious to on of ordinary skill in the art at the time the invention was made to combine Ho with Iverson because of similar reasons stated above. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a plurality of guaranteed bandwidth buckets, (first, second, third bucket), since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

38. As per claim 17, as closely interpreted by the Examiner, Iverson teaches

39. causing the traffic to be forwarded after the transfer, (e.g. col. 17, line 56 – col. 18, line 19);

40. decrement the bandwidth in the first and second buckets based on the size of the traffic, (e.g., col. 18, line 32 – col. 19, line 27). Iverson does not specifically teach the use of tokens. Ho teaches the use of tokens in buckets and refreshing said tokens, (e.g. col. 11, lines 30 – 44, *"token bucket"*). It would have been obvious to on of ordinary skill in the art at the time the invention was made to combine Ho with Iverson because of similar reasons stated above.

41. As per claim 18, as closely interpreted by the Examiner, Iverson in combination with Ho teach all that is similar above in claims 1 – 3, 7 – 11 and 15 – 17 as applied to claim 17, furthermore, Iverson teaches determine if the third bucket includes the appropriate amount of bandwidth, and prohibit the traffic from being forwarded when the third bucket includes less than the appropriate amount of bandwidth, (e.g. col. 18, line 32 – 41). Ho teaches that the buckets contain tokens, (e.g. col. 11, lines 30 – 44). It would have been obvious to on of ordinary skill in the art at the time the invention was made to combine Ho with Iverson because of similar reasons stated above. Furthermore, it would be obvious to anyone skilled in the art that in transmitting information utilizing token buckets, that if a bucket is void of the required tokens, and there is no other backup source to receive more tokens than it is not possible to transmit a message because all resources are used up and the system would have to wait till the recourses were available to transmit said message.

42. As per claim 19, as closely interpreted by the Examiner, Iverson teaches one or more input ports configured to receive traffic from a network, each of the one or more input ports including the first bucket, the second bucket, the third bucket, (e.g., col. 2, lines 64 – 67 & col. 17, line 56 – col. 18, line 19), and Ho more specifically teaches the scheduler, (e.g. col. 12, lines 15 – 40).

43. Claims 13 and 20 – 22 are rejected for similar reasons as stated above.

44. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson as applied to claim 1 above, and in view of Applicant's admitted prior art.

45. As per claim 4, as closely interpreted by the Examiner, Iverson does not specifically teach the guaranteed bandwidth buckets are credit/debit buckets. Applicant's admitted prior art suggests the use of credit/debit buckets being a modified type of token buckets, (e.g. page 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Applicant's admitted prior art with Iverson because using credit/debit buckets instead token buckets give the system more versatility that token buckets cannot perform, (i.e. credit/debit tokens bucket can be negative).

46. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson and Ho as applied to claims 1 & 5 above, and in further view of Chiruvolu (6839321).

47. As per claim 12, as closely interpreted by the Examiner, Iverson and Ho do not specifically teach the traffic shaping policy screens based on the type of service requested.

48. Chiruvolu teaches the traffic shaping policy screens based on the type of service requested, (e.g. col. 6, lines 19 – 35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Chiruvolu with the combine system of Iverson and Ho because it would be more efficient for a system to give priority to users that has a higher type of service as indicated by their priority bit therefore, meeting the requirements of a guaranteed quality of service.

Response to Arguments

49. Applicant's arguments filed 11/09/2006 have been fully considered but they are not persuasive.

50. **In the Remarks,** Applicant argues in substance that Iverson does not disclose or suggest providing a shared bandwidth bucket associated with a plurality of guaranteed bandwidth buckets.

51. As to the first Remark, Applicant is asked to look at the cited areas of Iverson and bandwidth buckets CIR, 402 and 404. Applicant's shared bandwidth bucket can be interpreted as bandwidth bucket 404. The "plurality of guaranteed bandwidth buckets" can be interpreted as CIR and bucket 402. It is also in the interpretations that a "plurality" is more that one, two or more, which is exactly what is taught by Iverson.

52. **In the Remarks**, Applicant argues in substance that Iverson does not disclose or even remotely suggest allocating bandwidth to the second bucket 404 based on the underutilization of bandwidth in CIR 400.

53. As to the second Remark, Applicant is asked to draw their attention to their own Remarks on page 14, paragraph starting with the word "Clearly". The Applicant cites Iverson, col. 17, lines 41 et seq., *"[a]t the end of every evaluation interval the Committed Information Rate (CIR) quantum is emptied into a the CSum bucket 402 **and**/or the ESum bucket 404."* It is very clear that the CIR 400 can allocate bandwidth to bucket 402 and bucket 404.

54. Applicant also groups the other independent claims to these argument and therefore fall under the same interpretation, rejection and response that is disclosed above.

55. **In the Remarks**, Applicant argues in substance that Iverson et al. and Ho do not disclose or suggest this combination of features recited in claim 16, either alone or in any reasonable combination. For example, neither Iverson et al. or Ho disclose or suggest a first bucket configured to receive tokens at a first information rate; a second bucket configured to receive tokens at a second information rate; and a third bucket configured to receive extra tokens from the second bucket. Iverson et al. and Ho, whether taken alone or in may reasonable combination, do not disclose these features. As described above in relation to claim 1, the Examiner alleges that CIR 400 equates to the claimed first bucket, first bucket 402 equates to the claimed second bucket, and second bucket 404 equates to the claimed third bucket (Office Action - pg. 8). Such an allegation is not supported in the disclosure of Iverson et al. Rather, Iverson's CIR IS the

information rate at which bits are assigned to the first bucket 402. The CIR is not a bucket that is assigned bandwidth at a first information rate. The second bucket 404 of Iverson et al. is then assigned bandwidth left over from that assigned to bucket 402 at the CIR. Clearly, Iverson et al. discloses only a single bucket (i.e., bucket 402) that receives bandwidth at a first information rate (CIR) and a shared bucket (i.e., bucket 404) that receives extra bandwidth from the first bucket. Iverson et al. does not disclose or even remotely suggest a second bucket that receives bandwidth at a second information rate and a third bucket that receives extra bandwidth from the second bucket.

56. As to the third Remark, it appears that the term "bucket" is being taken too literal in the interpretation of the claim language and the prior art by the Applicant. A "bucket" can be space in memory that is allocated to transferring information to another device or internal part of a device, therefore a "bucket" is nothing more than memory or sections of memory. In Iverson, it is stated that the CIR only allocates memory or "water" to "buckets" 402 and 404 if during transmission, the amount that the CIR would is not used up in its attempt to transmit a piece of information. Therefore the initial amount of memory or "bucket" is the CIR and what is not used in an interval is allocated to bucket 402 and/or 404 as explained above in the previous responses. To further prove this point an example that is taken from Iverson,

57. *"At the end of every evaluation interval the Committed Information Rate (CIR) quantum is emptied into a the CSum bucket 402 and/or the ESum bucket 404. The committed burst bandwidth credit (B_c) dimension of the first bucket 402 represents the amount of bandwidth that a User may transmit in a burst, potentially above the CIR, and expect reliable delivery to the network. The water level of the first bucket (BpCSum) represents the amount of bandwidth*

accumulated by the user above the CIR rate up to the maximum provisioned for the user (B_c). Thus, if the BpCSum is stable from interval to interval, the User is requesting traffic delivery at their CIR. If the BpCSum rises from interval to interval, the User is requesting traffic at a rate below their CIR and if it is falling, the User is requesting traffic at a rate above their CIR. If the BpCSum is positive, the port was requesting bandwidth at a rate below the CIR+B_c for at least the last measurement interval. If the BpCSum is zero, port bandwidth requests have been substantially equal to the CIR+ B_c for the port. If the water level in CSum is negative (below the midpoint), the rate that the port has been using bandwidth is above CIR+ B_c. If the port has accumulated any excess bandwidth credit by transmitting below CIR for some amount of time, this bandwidth credit will be used if he water level in the first bucket goes below zero."

58. Thus with the above understanding of what a "bucket" truly is, Memory, it is then understood that the CIR is memory that is utilized first when transmitting information if less is needed, then the non-used memory is allocated to a reserve for more bandwidth intensive information. The first underlined cited area of Iverson would make one understand that if the BpCSum is stable, the user is utilizing their memory at its normal rate. Which would mean that what ever is allocated at the time of transmission, the memory is all used up. This is further proven by Iverson in the summary of their invention, col. 2, lines 20 et seq., *"Users are guaranteed a minimum traffic rate or Committed Information Rate (CIR) and are allowed to temporarily send a burst of traffic or a committed burst (B_c)"* This would mean that the committed burst rate is the memory that is initially utilized from the CIR to transfer information.

59. All other arguments to dependent claims that Applicant makes fall under the same arguments to the independent claims and are therefore still rejected under the same interpretation and reasoning as stated above.

Conclusion

60. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. England whose telephone number is 571-272-3912. The examiner can normally be reached on Mon-Thur, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David E. England
Examiner
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